# An interim key to the Western Australian species of *Hibbertia* (Dilleniaceae)

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#### Abstract

Wheeler, J.R. An interim key to the Western Australian species of *Hibbertia* (Dilleniaceae). *Nuytsia* 15(2): 311–320 (2004). A key is presented to the Western Australian species of *Hibbertia* following the formal recognition of numerous new species in recent years.

#### Introduction

Following a series of papers on the taxonomy of the genus *Hibbertia* Andr. and the publication of many new species and infraspecific taxa (Toelken & Wheeler 2002, Wheeler 2000 a–b, 2002 a–e, 2004 a–c), existing keys to the genus by Bentham (1863) and Grieve (1998) have become out of date. An interim key is provided here prior to the 'Flora of Australia' treatment of the family that is still some years away.

Several taxa in the key are referred to only by informal phrase names or are annotated as being variants. Other taxa belong to complexes which are as yet unresolved. *Hibbertia exasperata*, *Hibbertia rostellata*, *Hibbertia nutans* and *Hibbertia uncinata* belong to such an unresolved complex and are all referred to in this key as *Hibbertia exasperata* group.

### Key to the genus *Hibbertia* in Western Australia

- 1. Stamens all on one side of 2 carpels (sometimes some staminodes occur opposite the stamens)
  - 2. Flowers in a several-flowered spike

    - **3.** Sepals, bracts and young leaves with fairly long coarse simple hairs, sometimes also with underlying minute stellate hairs
  - 2. Flowers solitary or clustered in the leaf axils
    - 5. Flowers stalked
      - **6.** Carpels hairy or scaly

7. Leaves strongly pungent or gradually tapered and spine-tipped	
8. Sepals with scales or scale-like stellate hairs	
9. Leaf with recurved spiny tip	H. eatoniae
9. Leaf with straight spiny tip	
10. Flowers 8–15 mm diam. Upper leaf	
surface smooth	subsp. lepidocalvx
10. Flowers 15–25 mm diam. Upper leaf	2 2 2
surface tuberculate	subsp. tuberculata
8. Sepals glabrous or with hairs, not scales	
11. Leaf tip recurved. Carpels 4-ovulate	H. ancistrophylla
11. Leaf tip straight, not recurved. Carpels 2-ovulate	1 -5
12. Sepals spine-tipped. Plant usually erect	
13. Sepals with dense minute stellate hairs (sometimes also	
hooked hairs). Leaves not usually spreading as far as	
90 degrees to the stem	
14. Midrib of leaf unusually enlarged on lower surface and	
protruding beyond leaf surface. Peduncle up to 4 mm long.	
Outer sepals with mucro to 4 mm long	
15. Young branchlets densely woolly. Stamens 5. Sepals	
without hooked hairs	H. mucronata
<b>15.</b> Young branchlets with tiny stellate hairs. Stamens 5–8.	
Sepals with hooked hairs	H. hamulosa
<b>14.</b> Midrib of leaf not unusually enlarged. Peduncle 6–15 mm long.	
Sepals with mucro up to 0.5 mm long	
13. Sepals appearing glabrous but with very sparse and very	- Juna
minute stellate or semi-stellate hairs. Leaves very rigid and	
usually at 90 degrees to the stem	H. ulicifolia
12. Sepals obtuse to acute, not or scarcely spine-tipped. Often a	an uneriona
small cushion-like plant	H. acerosa
7. Leaves not strongly pungent, but sometimes with a short mucro or	
a blunt or hair-like point	
<b>16.</b> Leaf tip recurved	
17. Leaf thick, linear, much longer than wide, erect or spreading	
with tightly revolute margins	
<b>18.</b> Sepals glabrous or almost so, sometimes with sparse minute	
stellate hairs, midrib of sepal not or only slightly pronounced	
19. Leaves with straight hairs or hooked hairs	H. avonencie
19. Leaves glabrous or almost so, or with occasional stellate hairs	111 11 011011515
20. Apparent margin of leaf somewhat acute, surface sparsely	
tuberculate, apex distinctly recurved	
21. Leaf 8–25 mm long	H lineate
21. Leaf 2.5–12 mm long	
20. Apparent leaf margin rounded, surface very minutely	11. recui viiona
papillose, apex not or only slightly recurved	H. nanillata
<b>18.</b> Sepals densely stellate-hairy and with pronounced midrib	
17. Leaf ovate, very thick, almost as wide as long, downturned	11. verrucosa
with tightly revolute margins	H microphyllo
16. Leaf tip not distinctly recurved	11. microphyna
22. Leaves glabrous or the upper surface glabrous or glabrescent	

5.

<ul> <li>23. Leaves 13–55 mm long, slender, lacking a terminal point. Stamens 17–25, staminodes several in a row outside the fertile stamens. (Kimberley region only)</li></ul>
<ul><li>25. Carpels 3 or 4-ovulate. Bracts broadly ovate and cordate. Leaf margins revolute to a sunken midrib. Staminodes present</li></ul>
25. Carpels 2-ovulate. Bracts narrowly oblong to linear or subulate.
Leaf margins revolute to a swollen midrib. Staminodes absent <b>H. gracilipes 24.</b> Sepals hairy, often minutely so
26. Sepals with minute stellate hairs. Upper leaf surface glabrous.
Carpels 2-ovulate
26. Sepals with uncinate and often stellate hairs. Upper leaf
surface with very occasional hooked hairs when young.
Carpels 4-ovulate
22. Leaves with stellate and/or simple hairs, sometimes with hooked hairs
27. Stellate hairs absent, or if present very few
28. Flower stalks single
<b>29.</b> Carpels 2-ovulate. Staminodes often present, 2 or 3 each side of the
fertile stamens. Sepals glabrous or with simple, straight or uncinate hairs
<b>30.</b> Sepals glabrous or with a few appressed hairs. Bract below
flower ovate to broadly ovate
30. Sepals with uncinate and straight hairs. Bract below
flower linear
20 Constant American description descripti
29. Carpels 4-ovulate. Staminodes absent. Sepals with
uncinate and stellate hairs

38. Leaves with sparse but conspicuously long spreading hairs.
Sepals more or less glabrous
38. Leaves glabrous or with short more or less appressed hairs.  Sepals glabrous or with short appressed hairs
39. Leaves and also sometimes sepals with short hairs H. crassifolia
39. Leaves and sepals glabrous or with minute stellate to semi-stellate hairs
40. Bracts narrowly ovate. Carpels 2-ovulate
40. Bracts broadly ovate and cordate. Carpels 3 or 4-ovulate H. stenophylla
37. Leaf apex prominently acute or pungent
41. Young branchlets woolly. Fertile stamens 5, staminodes absent
or 5-20 outside the stamens
42. Stamens 5, staminodes absent
42. Fertile stamens 5, staminodes 5–20 outside the stamens
<b>41.</b> Young branchlets not woolly. Fertile stamens 8–11, staminodes
absent or a few each side of the stamens
43. Midrib of lower leaf surface enlarged, prominent and protruding
beyond level of the revolute leaf margins
44. Leaf apex straight or almost so. Carpels 4(5)-ovulate
44. Leaf apex strongly recurved. Carpels usually 2-ovulate
43. Midrib of lower leaf surface not unusually enlarged, level with
or sunken below the level of the revolute leaf margins
<b>45.</b> Sepals with simple hairs
46. Sepals pilose with long hairs
46. Sepals very densely hairy with silky hairs
45. Sepals almost glabrous, sometimes with minute stellate hairs
47. Leaves very thick, almost cylindric 4–12 mm long, tip rounded
but with a short hard spine. Sepals 4–7 mm long
47. Leaves flat or compressed with recurved margins, mostly
10–25 mm long and gradually tapered at the tip, acute to
mucronate. Sepals 6–9 mm long
48. Midrib of leaf not or scarcely enlarged. Bract linear. Carpels 2-ovulate H. oligantha
48. Midrib of leaf distinctly enlarged. Bract ovate. Carpels 3–8-ovulate H. psilocarpa
1. Stamens all around the (2)3-5(15) carpels
49. Inflorescence branched and apparently leafless
49. Flowers solitary or clustered in the leaf axils
<b>50.</b> Stamens apparently free or almost so, sometimes fused into a ring at the very base
<b>51.</b> Flowers stalked
<b>52.</b> Carpels 2 or 3
53. Carpels 3, glabrous. (South-west and Pilbara regions)
54. Leaves and sepals softly hairy
54. Leaves and sepals glabrous
55. Leaves slender, 0.5–5 mm wide and tapered at base, not surrounding the stem
<b>56.</b> Flowers orange or yellow. Stamens 10–15. Leaves linear,
15–25 mm long
<b>56.</b> Flowers yellow. Stamens very numerous. Leaves very narrowly
elliptic, 40–70 mm long
55. Leaves 5–15 mm wide, oblong, not tapered at base but
surrounding the stem

<b>53.</b> Carpels 2 or 3, covered with tiny scales. (Kimberley region)
57. Carpels 3. Sepals scaly, the margin fringed with pale or dark hairs H. echiifolia
57. Carpels 2. Sepals scaly, sometimes fringed
58. Leaves folded lengthwise
58. Leaves flat
59. Low shrub with indumentum of fringed scales H. sp. A (Kimberley Flora)
59. Shrub to 2m with indumentum of soft stellate hairs
<b>52.</b> Carpels (4)5, or 10–15 <b>60.</b> Carpels glabrous
61. Leaves thin, flat, not spine-tipped
<b>62.</b> Leaves silky, silvery, narrow, tapered towards the base.
Flowers often clustered
<b>62.</b> Leaves glabrous, green, broad, or if narrow then stem-clasping
at base. Flowers usually single
63. Leaves perfoliate (ie leaf completely surrounding stem)
63. Leaves amplexicaul (stem-clasping at their base)
64. Leaves broadly elliptic to circular
64. Leaves ovate or very narrowly ovate to linear
65. Leaves very narrowly ovate to linear
65. Leaves ovate to narrowly ovate
60. Carpels hairy
66. Carpels 5–15 (usually 10). Leaves with 5–10 pairs of teeth.
Bract one, narrow
<b>66.</b> Carpels (4)5. Leaves entire or with 1–3 pairs of teeth. Bracts
several, dark, broad and papery
67. Erect to sprawling plant. Leaves narrowly oblong, densely
hairy with spreading hairs, margin entire or with very occasional
teeth. Flowers 20–35 mm in diameter
67. Sprawling plant. Leaves obovate to elliptic, with dense tiny
erect hairs and a few longer spreading hairs, margin with 1–3 pairs
of teeth. Flowers 40–65 mm in diameter long-stalked
68. Carpels glabrous
69. Carpels 5
70. Leaf tip pungent
70. Leaf not pungent
<b>69.</b> Carpels (2)3
71. Sepals glabrous or almost so, but sometimes margin ciliolate
72. Stamens numerous, more than 30. Leaves with long straight hairs
<b>72.</b> Stamens 10–20. Leaves glabrous or with short curled hairs
73. Leaves with curled white hairs
73. Leaves glabrous
74. Leaves thin, flat, ovate to elliptic, narrowly obovate or
narrowly oblong, 6–15 mm long. Flowers sessile  75. Leaves dimorphic, basal leaves much longer
and narrower than the ovate to elliptic
floral leaves
75. Leaves all similar in size and shape, narrowly obovate to narrowly oblong

<ul><li>76. Sepals apiculate. Leaves narrowly obovate H. glomerata subsp. wandoo</li><li>76. Sepals obtuse. Leaves narrowly oblong H. glomerata subsp. darlingensis</li></ul>
74. Leaves thick with margin revolute to the midrib, narrowly
oblong. Flowers on very short stalks
71. Hairs on calyx golden brown
77. Hairs on calyx white to grey
78. Leaves 2–6 mm long, thick, with margin revolute to the midrib H. glabriuscula
78. Leaves 5–50 mm long, thin, flat
79. Leaves entire
80. Leaves silvery
80. Leaves green to bluish green or grey-green
81. Hairs on sepals dense, appressed
81. Hairs on sepals few and strong, spreading, conspicuous
79. Leaves toothed
<b>82.</b> Leaves with only 1–3 teeth each side
82. Leaves with several teeth each side
83. Teeth of leaves serrate
83. Teeth of leaves crenate
68. Carpels hairy
84. Leaves spine-tipped. Carpels stellate-hairy, 6–10-ovulate.
Bracts inconspicuous, leaf-like
85. Leaves straight, 10–20 mm long. Sepals 12–16 mm long.
Carpels (2)3 with (8)10 ovules
85. Leaves curved, 4–8 mm long. Sepals 5–9 mm long.
Carpels 2 with 6–8 ovules
84. Leaves obtuse to acute, not spine-tipped. Carpels with simple hairs,
2-ovulate. Bracts conspicuous, black and papery
86. Flowers orange
87. Petals broad. Anthers yellow or black, obovate, more
than 0.5 mm wide. Carpels 5 H. miniata
87. Petals distinctly narrowed at base. Anthers yellow, linear,
less than 0.5 mm wide. Carpels 3
86. Flowers yellow
88. Flowers sessile. Leaves obovate to elliptic, sometimes narrowly so. Carpels 3-5
89. Carpels 3 or 4. Sepals with very closely appressed hairs.
Flowers 15–25 mm across
89. Carpels 5. Sepals with more or less appressed hairs. Flowers 30–65 mm across
90. Leaves narrowly elliptic to elliptic
90. Leaves obovate-elliptic
88. Some flowers at least shortly stalked particularly in fruit. Leaves
oblong. Carpels 4 or 5
50. Stamens fused into fascicles, occasionally also with a few single stamens
<b>91.</b> Carpels 3
92. Flowers on slender stalks
93. Leaves flat or with somewhat recurved margins
94. Erect or weeping shrub 0.5–1.5 m high. Leaves with
short curled hairs
94. Prostrate or sprawling shrub. Leaves glabrous or with straight hairs H. racemosa

93. Leaves sub-terete, glabrous
92. Flowers sessile or almost so
95. Leaf surface glabrous or almost so, margins conspicuously fringed in <i>H. vaginata</i>
96. Bracts conspicuous, broad, often fairly rigid or chartaceous
97. Apex of sepals acute
97. Apex of sepals acute
98. Leaves terete to semi-terete, tipped by tiny curled hairs
98. Leaves flat, glabrous
99. Stamens 2.5–4 mm long, anthers oblong to elliptic and apiculate H. chartacea
99. Stamens 1.5–2.5 mm long, anthers oblong to empire and aptender 11. Chartacea
100. Bracts more or less circular, 2–3 mm wide, obtuse or
apiculate
100. Bracts ovate to elliptic, 1–1.3 mm wide, more
or less acute
96. Bracts inconspicuous, not rigid or chartaceous
101. Leaf margins closely revolute to midrib so that lower
leaf surface appears 2-grooved, the leaf tip recurved
102. Leaves linear and straight
102. Leaves very narrowly triangular, and somewhat sigmoid
101. Leaves terete, thick with somewhat recurved margins or flat,
but not with margins revolute to midrib
103. Leaves flat or flattened, not terete
<b>104.</b> Floral and stem leaves different, stem leaves narrow;
floral leaves broader ovate to elliptic
<b>105.</b> Leaf margins long-fringed. Floral leaves 15–20 mm long.
Flowers 15–30 mm in diameter
105. Leaf margins entire or very minutely ciliolate.
Floral leaves 3.5–10 mm long. Flowers
8–15 mm in diameter
104. Floral and stem leaves all similar, narrow
<b>106.</b> Stamens 15–20. Sepals and leaf bases usually
conspicuously fringed
106. Stamens 8–12. Sepals and leaf bases glabrous
107. Leaves dilated and somewhat stem-clasping at base,
narrowly oblong to linear
107. Leaves not dilated at base not or scarcely stem-clasping,
oblong to narrowly oblong
108. Leaves oblong to elliptic, thin, truncate, often with minutely
recurved centre, midrib not enlarged and blade broad
109. Leaves oblong to oblong-elliptic H. glomerata subsp. darlingensis
109. Leaves ovate to elliptic, occasionally with
elongated basal leaves
108. Leaves linear, thick, apex obtuse, lower
surface with much enlarged midrib and with
very narrow blade
103. Leaves slender, more or less terete, usually tapered towards tip
110. Sepals obtuse or with very small soft point
111. Leaves 3–12 mm long. Staminal filaments of fascicles,
fused for two-thirds their length
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111. Leaves 10–22 mm long. Staminal filaments
fused for up to half their length H. hibbertioides var. meridionalis
110. Sepals with conspicuous soft awn-like tip H. hibbertioides var. hibbertioides
95. Leaves hairy, at least towards the base, not glabrous
with a conspicuously fringed margin
112. Sepals glabrous or with sparse hairs only
113. Bracts inconspicuous. Sepals obtuse to subacute
114. Leaves alternate, not clustered, oblong-elliptic
114. Leaves clustered, linear
115. Anthers narrowly oblong, 1–2 mm long. Sepals obtuse H. desmophylla
115. Anthers narrowly obovate, 0.7–0.8 mm long. Sepals
obtuse to sub-acute
113. Bracts conspicuous. Sepals acute
116. Leaves with a short blunt mucro. Bracts narrowly triangular H. fitzgeraldensis
116. Leaves obtuse. Bracts broadly elliptic, rigid
112. Sepals with dense silky hairs
117. Leaves flat or only very slightly recurved margins. Stamens
11 in 3 fascicles each of 3 stamens and 2 single stamens
117. Leaves with recurved margins. Stamens 25–30 in 5 fascicles
each of 4–6 stamens
<b>91.</b> Carpels 5
118. Leaves spine-tipped
Tio Deaves spine appearamental since since since special stocks
118. Leaves not spine-tipped, sometimes with a soft point 119. Leaves flat or with slightly recurved margins
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